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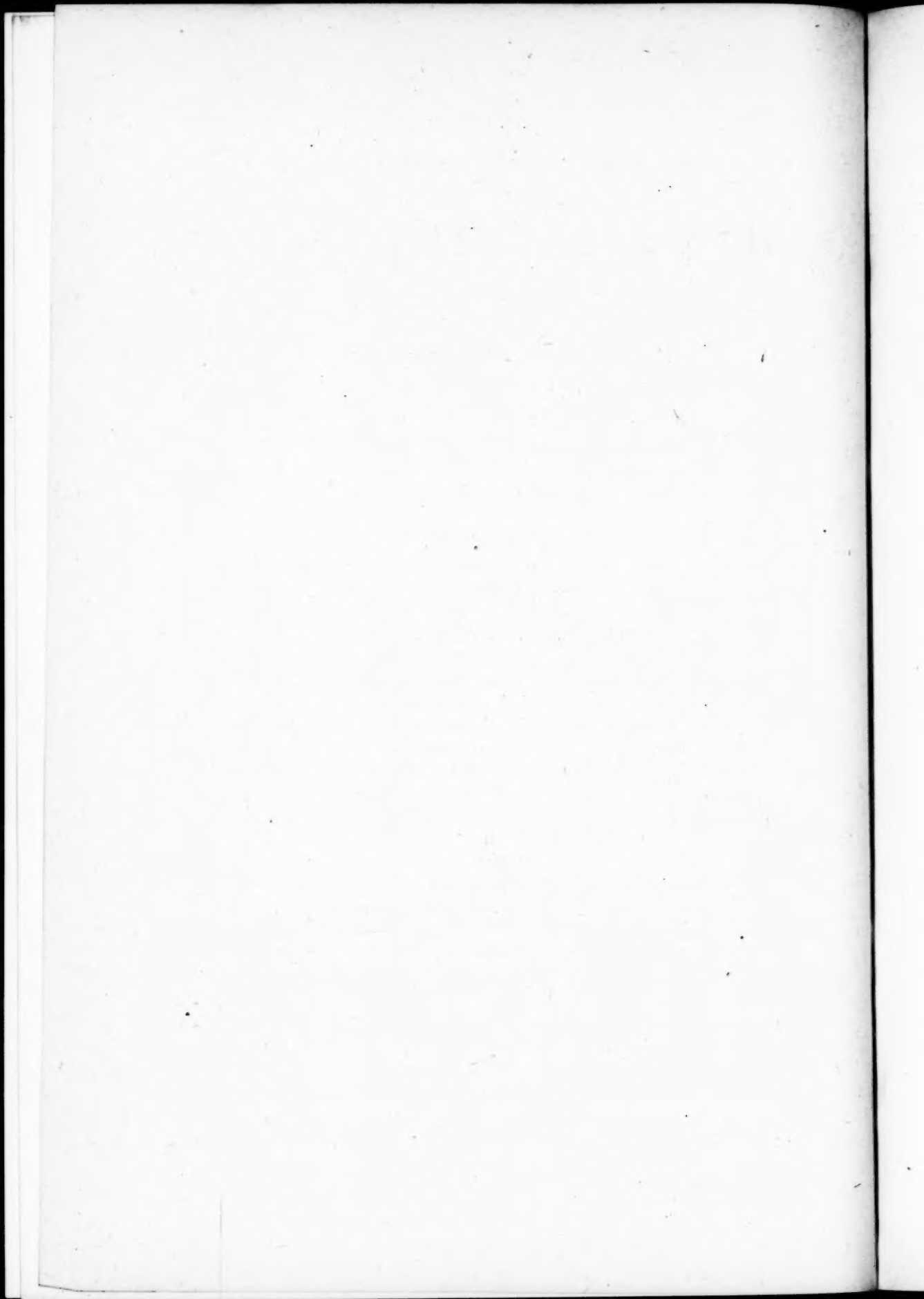
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# THE AMERICAN JOURNAL OF OPHTHALMOLOGY

VOL. XXXIII.

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## ORIGINAL ARTICLES.

### HISTORY AND VALUATION OF THE MODERN METHODS OF TREATING PURULENT DAKRYOCYSTITIS.\*

BY DR. K. SCHUSTER.

(From Prof. A. Peters' Clinic, Rostock.)

Prof. A. Peters, who for years has worked out a method for treating purulent dakryocystitis, requested me to sift the history of this method and to find what viewpoints led to its adoption. He wanted especially to find out the reasons which were paramount in introducing drainage and the treatment with probes.

I can here confine myself to the statements and opinions as they appeared in the course of the last century, because Hirschberg,<sup>13</sup> in his excellent History of Ophthalmology, has given a whole chapter to the treatment of purulent dakryocystitis, from which he quoted an interesting description recently at the Berlin Medical Society. West<sup>32</sup> reported on his new method of treating purulent dakryocystitis. I can, therefore, limit myself to the mention of a few points from this history of Hirschberg's which are of interest in our question.

Thus, Arrhigenes, the contemporary of Trajan, already mentioned the perforation of the tear-sac into the nose, and as may be seen in the writings of Ali Ibn Isa, the Arabs learned this method from the Greeks. Another Arabian oculist, Ammar, recommended the perforation of the bone into the nose with a glowing piece of iron, if in a case of lacrimal fistula the bone has become affected. This method was, also, accepted in mediæval medicine, and in the beginning of modern times we see Ambroise Paré still using this method.

\*Klin. Mtsbl. f. Augenhlk., IV, p. 596.

We note further on from this interesting work that, at the renaissance of ophthalmology in the beginning of the 18th century, the bloody perforation of the lacrimal bone with destruction of the lacrimal sac is recommended by the Englishman Woolhouse. Heister, of Altdorf, also, practiced the perforation into the nose. In general, however, this author used the method introduced by Anel in 1713, consisting of syringing and probing from the canaliculi. It is interesting that, as Hirschberg states in speaking of West's method, already then and up to the middle of the 19th century several oculists performed syringing and probing of the nasal duct from the nose.

Further on we find, in 1734, Petit teaching to cut the lacrimal sac open from without and to introduce a grooved probe into the nasal duct, and to keep the canal open by means of a small bougie. This method was often practiced and modified. Hirschberg calls attention to the fact that, in 1753, Louis already pointed out that it was as much a mistake to break through the bone in all cases, as also to do away altogether with the perforation, as in the newer tendency.

After Janin, in 1772, had proven the old teaching wrong, according to which there was always a caries of the bone in cases of lacrimal fistula, the method of making an insignificant opening into the nose was abandoned at the beginning of the 19th century; but this was soon replaced, as Hirschberg says, by no less an error, namely, to slit the anterior wall of the lacrimal sac and to permit lead nails or golden tubes to be healed in. In Germany little attention was paid to this foreign method and gut strings and silk threads were used.

From this it is seen that the real originator of the modern ideas was Anel, whose aim was to open the drainage apparatus and to syringe out the pus in order to render unnecessary the perforation toward the nose and the cauterization; and that Petit, Scarpa and Dupuytren have in different ways effected a lasting drainage through the nasal duct and made this the therapeutic method.

The insufficiency of the permanent drainage with tubes and lead nails was, however, so plain, and the non-successes so frequent, that special surgical operations were devised in order to remedy the disadvantage resulting from this method of treatment. Even the milder method, by means of gut string and silk threads soaked in some astringent fluid, caused the patient great annoyance, especially since the treatment lasted for many months.

With the aim of getting rid of this method and to accomplish the most important factor of healing, the permanent opening of the duct, Bowman<sup>3</sup> invented a new method which made friends quickly and which is still in use to-day. The main point in Bowman's method, on the success of which he first reported in 1857 in the *Ophthalmic Hospital Reports*, was that in place of the silk threads and gut strings he constructed thin silver probes, which followed the curves of the nasal canals and thus could overcome a contraction in its lumen. Of his six probes of different thicknesses, the thinnest could always pass through the duct; and in order to be able to introduce further probes for stretching the tissues, Bowman added his method of slitting the lower canaliculus. He was prompted to do this by the observation that when the ectropionized lower canaliculus was slit the stillicidium was promptly cured. He was, too, convinced of the absolute innocuousness of this operation, and thus he added the slitting of the canaliculus to the probing; in doing this he slit without special preference the upper or the lower canaliculus. Since, further, in some cases of purulent dakryocystitis the slitting of the canaliculus led to the total evacuation of the pus, Bowman concluded to slit the canaliculus in all cases of lacrimal obstruction. This method had the great advantage that the resulting opening could not again be closed up; that in any form of relapse the treatment could be resumed by the previously made route and the incision of the skin became superfluous.

Although the slitting of the canaliculus alone produced in many cases a better drainage of the pus and overcame the eversion of the punctum, Bowman was fully aware of the fact that the main points of attack for treatment with probes were the strictures which lie within the lacrimal sac and in the upper part of the nasal duct. In this the probes primarily aided the diagnosis of strictures, and that is what he used the thin probes for.

The practical recommendations made by Bowman were for a long time the leading ones. Thus, when pus runs out through the puncta, the thickest probes are to be used at once, at least if they can be passed without force. If this cannot be done, it is best to wait a day, or to introduce a thinner probe. This can be made easier by drawing on the lid toward the temple so as to be able to see whether folds of mucous membrane lie in the way of the probe; such a drawing on the lid by itself, too, renders the introduction of the probe very much easier. The observation,

that a purulent dakryocystitis could be considered as half cured, if the largest probe had passed the whole length of the nasal duct, was also of great importance.

This simple method, which by the introduction of metallic probes sought to reduce the secretion and to keep the lacrimal passages open, constituted so great a progress over the severe procedures of former times, that it is not astonishing that it was at once accepted with eagerness; and since in uncomplicated dakryocystitis the results were sometimes surprising, it is easily understood that it quickly spread very far and remained the dominating method till the end of the last century, and it has even to-day a great many admirers.

The first one to report on extended observations with Bowman's method was Weber<sup>29</sup> at Darmstadt, who studied the numerous failures with this method and tried to overcome them. He laid decided emphasis on the difference between cases of simple constriction of the tear passages and the diseases of these passages which are combined with mucopurulent or purulent secretion. The former ones only can be cured by Bowman's method with probes, while the cases with formation of strictures, swelling of the mucous membrane or dilatation of the lacrimal sac with purulent discharge are cured only very rarely. He even reported numerous cases in which the probing produced a complete obliteration of the lacrimal passages. Weber was right in likening such results to those of the cauterization practiced by Desmarres. The main cause for the failures of probing in purulent cases was found in the fact that Bowman's probes were much too thin to produce a dilatation of the tear passages and did not come in contact with all parts of the mucous membrane. Anyhow, the stiff probes could not conform to all the curves in the tear passages, neither was it astonishing that such thin probes could cause severe injuries to the mucous membrane. As Weber at this occasion complained of the fact that Bowman's probes could not influence the secretory activity of the mucous membrane nor alter it, we with our modern knowledge of pus production, too, cannot understand how the contact with the probe should exert such an influence.

In order to overcome these unfavorable circumstances Weber constructed elastic bougies with a conical point which could be replaced by silver probes with a conical point if the stricture should prove to be very callous. After a passage through the tear duct had been effected in this manner, he introduced wax



bougies up to 4 mm. in thickness with which a considerable dilatation of the duct could be produced. In order to introduce these bougies Weber did not slit the lower, but the upper canaliculus, including some of the lid margin. Then he carefully probed with a silver probe and after its passage a thicker bougie was entered. If there was, however, some suppuration, the tear passages were first washed out with some astringent solution until every trace of inflammation was gone, and the bougies were used only then.

At this time Fano,<sup>8</sup> in 1862, reported on his experiences with his method of syringing with tincture of iodine. This stopped the suppuration, but, as Zehender rightfully said, this could be recommended as a sure procedure for obliterating the tear passages, if it was not so irritating to the eyeball.

A longer paper, in 1864, by Critchett, who had investigated the pathology and therapy of the drainage apparatus, gave first a very instructive and even to-day yet very readable review of the different causes of stillicidium and its treatment; and in the second part, which deals especially with the diseases of the tear sac and of the nasal duct, the different forms of lacrimal suppuration are closely dwelt on, as, for instance, ectasia of the sac, perforating dakryocystitis with or without periostitis, periosteal abscess in the region of the lacrimal sac. The cause of these affections according to Critchett lies in a transmission from the conjunctiva, as could well be seen in benign diseases of the conjunctiva in the newly born.

Critchett says that Bowman's method acted decidedly revolutionary. Its most important part was the catheterization of the tear passes, which, however, was often made very difficult by the swelling of the mucous membrane, and he pointed out more especially what obstacles to this treatment would arise by the establishment of false passages. In order to do away with the difficulties combined with the introduction of the thicker Bowman probes, Critchett used thin laminaria probes which by slowly swelling would cause a safe dilatation of the nasal duct. Unlike Weber, whose work was not even referred to in the review in the *Annales d'oculistique* which were at my disposal, Critchett lays emphasis on the perfect emptying of the tear passages rather than on an alteration of the mucous membrane. It is clear that Critchett's procedure is superior to Weber's because the probes

swell on only after having been introduced, while Weber's bougies often encountered serious difficulties during their introduction.

Weber,<sup>30</sup> influenced by these considerations, in later days employed Critchett's method with success. He tried to improve on this method by finding the exact location of the stricture, by at first dilating only down to it, then only he attacked the stricture itself, or, if there were several, first the uppermost, then the next lower one; and if this stricture was situated at the orifice of the nasal duct in the nose, he introduced by means of a thread a laminaria probe by which he effected the dilatation of the lower part of the duct. In this second paper Weber also reported his observations on ectasia of the sac, in which he reached an improvement, by producing an ectropium of the lower canaliculus, because he believed that the pathological secretion of the mucous membrane was being kept up by the moisture of the tear fluid. It is probable that the compressive bandage which he applied, too, had a certain influence on the ectasia of the sac.

Shortly before this communication of Weber's, in 1864, Jaesche had published a new method which aimed at the removal of callous strictures which Weber's bougies could not cure. In such cases Jaesche objected to Bowman's probes and introduced a probe with a groove in such a manner that the groove was always directed outward. As soon as this probe reached an obstacle a small tenotome-like knife was shoved down in this groove and the stricture cut through in different directions. In this manner a dilatation was effected and Jaesche tried to make this permanent by means of gut strings and lead wires. Weber considered this a step backward, and he recommended the use of laminaria sticks as after-treatment of the Jaesche incisions.

A further progress was aimed at by Stilling,<sup>26</sup> who cut the strictures with a specially constructed knife, prompted by the experiences of some French surgeons with strictures in the urethra who found that the cut strictures healed better when no bougies were entered afterwards. Based on this, Stilling abrogated all probing. The histories of his cases, however, do not show whether they were really cases of suppurating dakryocystitis. It seems rather that he dealt in most cases with uncomplicated stenoses which had produced a simple stillicidium. Yet, Stillings' experiments deserve a full measure of attention, because he was the first to attempt the restoration of the drainage of the tears without probes.



These methods of Bowman, Weber and Stilling which tried to make the tear passages permeable have since remained the principal ones, although numerous attempts have not been wanting to enlarge and improve these procedures. We need not dwell on these details, the less so since the exhaustive paper by Toedten<sup>28</sup> "On the treatment of lacrimal passage diseases in the second half of the 19th century," has collected everything on these points. This includes the numerous modifications of the instruments to slit the canaliculus, the different methods of enlarging the canaliculus by blunt instruments, then the different methods of cutting the strictures, the forced dilatation, the varying methods of probing, the difference in the thickness of the probes and probes for prolonged retention. We might, also, refer to the attempts to dilate the nasal duct by means of massaging instruments; furthermore, the medicamentous treatment with syringing and armed probes and the treatment with electrolysis, cautery, curettement and scarification.

None of these methods has been used extensively, and in their choice many individual factors, personal aptitude and other practical points of view are decisive.

The results attained with all of these methods of treatment in purulent dakryocystitis were, however, unsatisfactory in many cases, and when to this was added the knowledge that the permanency of an ever so slight suppuration from the lacrimal sac endangers to a high degree all operative and accidental wounds of the eyeball, it is not astonishing that experimentors strove to remove these dangers, and the incommidity of a continuous tear dropping, and, not the least, the suppuration, in a radical manner. Such a method was the more easily introduced as it shortened in most cases the time of treatment. This was done by the destruction of the lacrimal sac.

After the sac had in former times been destroyed by caustic agents, later on its extirpation became the accepted method. Since Magni<sup>17</sup> and Gotto<sup>9</sup> had performed this operation in 1862, Berlin<sup>2</sup> in 1868 drew attention to the effectiveness of this method; further, a paper by Oertmann<sup>20</sup> from Sæmisch's clinic could report nothing but good concerning this operation; it was, however, generally adopted only after Schreiber,<sup>24</sup> in 1881, had again urgently recommended it. Since then this method has gained ground daily, and especially Kuhnt, Axenfeld and Eversbusch and many others supported it, and worked on its further improvement. To-day probably a great many oculists employ

this method when a quick cure of the affection of the lacrimal sac is desirable, especially before operations and in order to heal a corneal ulcer.

This is evident from the literature published since 1899, since Toedten's paper. It would go too far to refer here to all the single papers on the extirpation of the lacrimal sac. Suffice it to point to the fact that Schirmer, as is detailed in a paper by Hagen,<sup>11</sup> in 1903, extended this method of treatment even to cases in which phlegmone was present, and that the chief indication for this operation was to prevent wound infection on the eyeball. In such cases probably most oculists refuse all conservative treatment in order not to postpone the operation too long. When, however, this indication is absent, the majority of the authors consider this mode of treatment as justified only after the conservative methods have been tried. This includes, also, the washing out of the sac, which was especially recommended by \* \* \* \* (here follows a list of 25 names—*Transl.*), which must, however, according to Axenfeld, be avoided when there is any suspicion of a tubercular affection of the sac.

By the side of these recommendations to extirpate the lacrimal sac numerous efforts were made to treat a purulent dakryocystitis in other ways. Thus, for instance, Scheffels, in 1901, again recommended the destruction of the sac with Vienna caustic paste, Bauwens, in 1902, with zinc chloride. Such a method was comprehensible at a time when it was unknown that hæmorrhages could be governed by adrenal preparations; since, however, the technique of the operation of Axenfeld and Mueller has been improved upon by the use of eusemin, which gives a deep anæsthesia, and of suprarenin, which makes it bloodless, the destruction of the lacrimal sac is probably no longer employed.

The efforts to combat the suppuration by syringing out the sac, too, reach into the most recent time. Fluor, hydrogen peroxide, boric acid, copper, zinc, protargol, and other silver preparations, like argyrol, argentamin, etc., are used. Furthermore, electrolysis \* \* \* \* \* (here follow 50 names of authors.—*Transl.*). Many papers occupy themselves with the different ways of probing the tear passages. Some recommend the thickest probes, others think they must warn against these. Others say they cure every case of suppuration with probes or retension sounds. Some recommend for the dilatation of the nasal duct decalcined bone, usually a frog's femur.

Some recommend massage, others heat; others scrape off the diseased mucosa. Darier punctures the sac and injects anti-staphylococcus serum. Again others consider the tear fluid as an obstacle to the healing of the suppuration of the tear sac and extirpate or cauterize the lacrimal gland. Ramoni has even resurrected Scarpa's nail. Finally, the old continuous drainage is revived by drawing a silk thread through the duct, tying its ends on the cheek and letting it lie for some time—and it is astonishing what a following this method has found.

From the many forms of these, partly very tedious, methods it is seen that the cure of suppuration of the tear sac can, in the most different ways, be reached in many cases; on the other hand, it also shows that every method has its occasional failures.

It seems to be the uniform opinion in recent times that when after some time these methods aiming at an improvement in the permeability of the tear passages have failed, the extirpation of the tear sac is indicated; and this method has gained more friends yet, since it was learned how the constant stillicidium could be stopped by the removal of the palpebral lacrimal gland.

It must, however, be felt that by the extirpation of the tear sac a condition is brought about which prevents the drainage of the tears for all times; and although it must be stated that the annoyance produced in this manner is comparatively small, it is plain that a restitution of the tear drainage after the cure of the suppuration was a thing to be desired. With this aim Zimmerman (1907-1908) introduced small metal canulæ which in some cases were borne extremely well for a prolonged time. The method has, however, not been generally adopted.

The desire to get rid of the suppuration without sacrificing the tear sac and to produce a radical cure induced Toti (1904) to recommend not to extirpate the tear sac, but to open a window in its posterior surface and to produce at the respective locality a communication with the nose through the bone. From the reports of a number of operators it is certain that in this manner the desired end, the cure of the suppuration without damage to the tear sac and to the drainage of the tear fluid, can be reached. Since this method offers only unimportant difficulties, and does not take any longer than the extirpation of the lacrimal sac, its real improvement on former methods is plain.

Since thus in recent times in cases of large mucocèles and extasies of the lacrimal sac, the intranasal treatment was adopted, it was clear that rhinologists would try to attack even the com-

mon cases of suppuration of the sac. Passow, in 1901, had already made the attempt to dissect the nasal canal and to get to the lacrimal sac by this route; in 1904, Aubaret, Lagrange and Wiener resuscitated this method, but in the most recent time only it was with some changes adopted by West, who reported on it in 1910 and demonstrated it to the Berlin Ophthalmological Society. His favorable results were confirmed by Tolyák (1912), and Onodi (1912). It cannot be doubted that this procedure according to present reports has the same effect as Toti's operation, which has the disadvantage of causing, if ever so small, a scar on the back of the nose.

A further conservative method, which was recommended in 1863 by Fano and then was tried by Verneuil, Romiée, Creus, del Toro and Lopez Diaz, the injection of tincture of iodine, has recently been again recommended by Wessely. He avoided the former failures, which were due to too high a concentration and too large a quantity being injected, by injecting only a few drops of the proper solution and only once, or at most a few times. The thought of limiting the suppuration in this manner is certainly commendable, since we have made the experience that tincture of iodine is an excellent remedy in order to cure suppuration in cavities, as is especially evident from Baetgen's paper<sup>1</sup> "On the cure of large mucocoeles and large ectasies of the lacrimal sac." Recently, Wicherkiewicz<sup>33</sup> confirmed these successes, who introduced small cotton pledgets soaked with tincture of iodine through the slit canaliculus into the lacrimal sac; as also, Schreiber,<sup>25</sup> who treated the patients according to Wessely's method.

After Larra,<sup>16</sup> Ollendorf,<sup>21</sup> Grossman,<sup>10</sup> and Chauvin, had used fibrolysin to cure strictures of the nasal duct, without, however, meeting with great successes, Cohn,<sup>6</sup> in 1912, reported favorable results in a larger number of cases. Cohn used it only in simple strictures, but Wolffberg<sup>34</sup> used fibrolysin, also, in dakryocystitis combined with stenosis, and reported good results in 10 cases.

To reach the same result, the cure of the suppuration of the lacrimal sac without sacrificing the sac, has for some years been the aim of the work done by Professor Peters. His method and its success have been reported in detail in the dissertation of Petersen;<sup>22</sup> and I here quote the exact description as given by Peters in his book "On the diseases of the eyes in childhood":

"The aim of the therapy must be to cure the suppuration. For this the first thing necessary is the slitting of the lower canalicu-

lus with a blunt Weber's knife (with a button end). Then, as formerly a probe, a button ended, slightly curved knife is introduced with great care into the strictures, and while continually turning the cutting edge of the knife the strictures are cut. Usually, although the pus has been previously pressed out of the lacrimal sac, now some more pus flows out. If the purulent character of the secretion is not gone the next day after this treatment, the slitting is repeated and the lacrimal sac is several times emptied by pressure." I may add that from the beginning both canaliculi are slit.

Based on his experiences, showing 77 per cent. of cures, Peters demands that in future the tear sac must not be extirpated unless this simple method has proven unsuccessful.

After Petersen had proven that pneumococci were still present in 23 per cent. of the cases after the treatment, more recently Moennich,<sup>19</sup> with the new enriching method of Elschmig and Ulbrich by instilling serum bouillon into the conjunctival sac, has shown their presence in 34 per cent. of the cases. When considering that according to Mattice,<sup>18</sup> after extirpation of the lacrimal sac pneumococci were still present in 43 per cent., the comparison is certainly not unfavorable to our method. Even, if we place no particular weight on these differences in numbers, it is proven that as far as the cleansing of pneumococci is concerned, the conservative method does not lag behind the radical extirpation.

In solving the question, how the results of this simple method of cutting the strictures are to be explained, Stilling's statements are certainly correct to-day still; namely, that the lumen of the nasal duct will become larger if the introduction of probes for dilatation is avoided, because they produce an irritation which causes increased scar formation. This is, however, not the only danger connected with probing, for it is easily understood that the probes penetrating into the lacrimal sac may easily make a wrong passage on account of the swelling of the mucosa; and every experienced oculist can remember numerous cases in which he had to give up using a probe because it had gone beneath the mucous membrane. Thus the disease germs are directly inoculated into such artificially made pockets which can in no way be influenced by slitting the strictures, and in this manner many of the failures of the former treatment with probes can be explained.

Professor Peters does not advise altogether against an after-



treatment with probes, but it must not be done in the first two or three weeks after the slitting. If there is still stillicidium, medium large probes may be carefully introduced after this time; if, however, the suppuration does not grow less and repeated cutting does not in a few days reach the desired end, the extirpation of the lacrimal sac is advisable.

Since thus in this simple manner a bacteriologically proven cure and freedom from the annoyance can be obtained, it is comprehensible that at our clinic we have no confidence in the methods of syringing, electrolytic treatment, scraping of the lacrimal passages, drainage and probing; and that in view of our successes there is no reason to first try Wessely's method. This can come into question only when the suppuration persists in spite of the slitting of the strictures, and Professor Peters will collect experiences on this point at our clinic in the near future.

This question has lately reached a new stage since the ætiology of suppuration of the lacrimal sac has been made the subject of further studies. While hitherto tubercular affections of the mucous membrane and the spreading of conjunctival and nasal inflammatory products were looked upon as the sole causes of suppuration of the lacrimal sac, it has been shown by the explorations of Rhese<sup>23</sup> and von Brunzlow<sup>4</sup> that in about 37 per cent. of the cases of uncomplicated suppuration of the lacrimal sac the Roentgen plate reveals the existence of an accessory sinus suppuration. This experience coming from the rhinological side has recently been fully confirmed by a paper by Timm<sup>27</sup> coming from the eye clinic at Rostock.

This naturally raises the question if and how an existing suppuration of the lacrimal sac is influenced by an existing accessory sinus suppuration. It has previously been known that phlegmone and fistula formation in the neighborhood of the lacrimal sac are dependent on sinus suppuration and can be quickly and surely healed by its treatment, as is seen from the paper by Hiammer<sup>12</sup> "On the relation of phlegmone and fistula formation in the region of the lacrimal sac to the suppuration in the accessory sinuses of the nose," and by the experiences of Rhese, and von Brunzlow, with old tear sac suppurations, which show that in reality, even with uncomplicated tear sac suppurations, successes are obtained by intranasal treatment and their cure is influenced favorably.

We will have to find out in future whether the failures of simple splitting of the stricture, as is done at our clinic, are



perhaps due to accessory sinus affections. Should such an influence be proven, we will in future give the preference to the intranasal treatment of accessory sinus suppuration, before performing the extirpation of the lacrimal sac.

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## MEDICAL SOCIETIES.

### REPORT OF THE FIFTY-SECOND ANNUAL MEETING OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY.

Held at Washington, D. C., on May 9 and 10, 1916.

Dr. G. E. deSchweinitz in the chair.

Reported by Miss Lulu Gay, Philadelphia, Pa.

#### *Three Years' Experience in Sclero-Corneal Trephining in Glaucoma.*

Dr. W. H. Wilmer, Washington, D. C.: I wish to report forty-one cases of sclero-corneal trephining. Twenty-seven operations were done for chronic simple glaucoma, with a return of increased tension in three cases. In three cases operated on for chronic glaucoma, with acute exacerbations, there was no return of increased tension. In two cases the operation was performed for chronic inflammatory glaucoma, with no return of increased tension. Secondary glaucoma following irido-cyclitis was the cause of the operation in six cases, in which there was no return of increased tension. In one case there was absolute glaucoma after retinal hæmorrhage; the eye was enucleated later. Secondary glaucoma after anterior adherent leucoma led to operation in one case; no return of increased tension. One case was done for secondary glaucoma after cataract extraction; with no return of increased tension. From my experience in these cases I would conclude that sclero-corneal trephining is a valuable addition to ophthalmic surgery.

#### DISCUSSION.

Dr. W. B. Marple, New York: I heartily agree with the conclusions of Dr. Wilmer's paper. Wherever there is a narrow nasal field, a broad iridectomy is done with considerable risk to the patient. In such cases I do a trephining operation. In one or two cases of complete or absolute glaucoma with high tension. I have done a double iridectomy at the same time as the double trephine operation; and it seems to me that the prophylactic effect has been possibly all due to the double trephining operation.

Dr. H. D. Bruns, New Orleans, La.: I have had exactly the same experience as Dr. Marple, that where we had a narrow field, the field did not change after the trephine operation. I am convinced that the tension is as much lowered in sclerotomy without iridectomy as it is with iridectomy; and that iridectomy has no effect whatever on the reduction of tension. Of course, it is necessary to prevent circular synechiae in some cases; but in only one case in which I made the radical snip has there been any synechia, and in no single case have I had acute glaucoma.

Dr. W. E. Lambert, New York: I wish to report two cases of this operation. One is a case in which there has been little increase of tension in a young man, with hereditary glaucoma. He had a very much contracted field. The vision in one eye was 20/200 and in the other 15/20. He was operated on in one eye, pilocarpin being used. The effect of the Elliot operation was to control the glaucomatous process. The fields did not increase, but they did not contract. The vision remained practically the same. He came back after a year, with a sub-acute attack in the good eye; and an operation was performed, similar to the one that had been performed in the other eye, with very satisfactory results. The second case is one in which an operation was done for an acute attack of glaucoma. The other patient was an old doctor in New York, who had lost one eye. He had had several attacks of glaucoma, not particularly acute; and he was intelligent enough to control the attacks with miotics. My advice to him was an operation, and I intended to do an iridectomy. He objected to any operation at the time, and elected to continue his medical treatment, which controlled the process for some time. However, he came to me with a rather bad attack one day. His vision had become reduced from 20/20 to 20/100, with the eye more or less injected. The tension was increased to 50. I advised an iridectomy but he insisted upon an Elliot trephining operation. I did this operation against my own judgment, as I had always been very much opposed to it; but the result was wonderful. The process stopped, and he has never had a return of glaucoma, his vision at the present time being 20/20.

Dr. A. E. Ewing, St. Louis: In operating on three eyes for the relief of glaucoma by the Elliot trephining method, the trephine openings were placed to the nasal side above the horizontal meridian, about on a line with the upper border of the insertion of the tendon of the internal rectus muscle, this location having been chosen with the purpose of also obtaining vision by the ac-

companying iridectomy. Relief from glaucoma resulted in all these cases, with disappearance of the staphyloma in the last two eyes, and a great improvement in the vision of the first one; but there was no formation of the characteristic conjunctival bleb. Although there was no further glaucoma in any of these eyes, the lack of the bleb indicated that the neutral region between the insertions of the muscles may be a more proper location for securing drainage than that in line with the tendon.

Dr. Andrew Timberman, Columbus, Ohio: We used a sub-conjunctival injection of the solution of adrenalin prior to the operation, for the control of the hæmorrhage that we occasionally find, and which is sometimes quite bothersome. I have found it quite a help in the technique of the operation to limit the injection to the space directly under the conjunctiva.

Dr. G. E. deSchwenitz, Philadelphia: I agree with Dr. Marple and Dr. Bruns that scerelo-corneal trephining is the safer operation for correcting contraction of the visual field, particularly where there is danger of encroaching on the fixation point. I, myself, have never seen the fixation point disappear under these circumstances, but have seen it do so in iridectomy.

*The Operative Treatment of Partial Corneal Staphyloma and of Fistula of the Cornea with Conjunctival Flap (Kuhnt).*

Dr. Arnold Knapp, New York: Partial staphyloma of the cornea, when complicated by glaucoma and attacks of iridocyclitis, is one of the most difficult problems that confront the ophthalmic surgeon. The only method of treatment that offers some hope of success consists in excision of the staphyloma, release of the adherent iris, iridectomy, and covering the defect with a double pedunculated conjunctival flap. I wish to refer to two cases. In the first, the thin staphylomatous area was replaced by a thick scar, which bulges slightly and is œdematous. The ocular tension continues increased. In the second case the staphylomatous area is replaced by a firm flat scar, and the ocular tension is normal.

Fistula of the cornea is also a condition that offers serious obstacles to successful operative treatment. In one case I was successful in doing a curettage of the fistulous tract, making an iridectomy, and covering the corneal opening with a double pedunculated conjunctival flap. The cornea is now firmly healed, and the attacks of glaucoma have ceased.

DISCUSSION.

Dr. Dunbar Roy, Atlanta, Ga.: In the South, where we have a great many colored people in the clinics, we have a great deal of ulceration of the cornea; and for the last six years I have been making use of conjunctival flaps, with excellent results. It is quite common for these patients to come for hernia of the iris and protrusion of the iris; unless the process is stopped, the hernia becomes larger, and the whole cornea is degenerated and lost.

Dr. J. E. Weeks, New York: I have had some experience in the Kuhnt operation. The healing in the cases I have operated on, has been perfectly smooth. In the course of a month, the greater part of the cornea, except the point of fistulization, has become almost clear, and the conjunctival flap has receded. At the end of four or five days the stitches may be removed.

Dr. G. E. deSchweinitz, Philadelphia: While visiting Fuchs, in Vienna, I saw him do an iridectomy as soon as the corneal ulcer began to heal; and he gave the same reason for doing this that Dr. Knapp has given.

*On the Ambulant After-Treatment of Cataract Extraction: With a Note on Post-Operative Delirium and on Striped Keratitis.*

Dr. Henry Dickson Bruns, New Orleans, La.: The paper reports 603 extractions of uncomplicated, mature and immature senile cataracts.

In 1908, 39 cases confined to bed in the usual way had a total of five, or 12 per cent., failures. In the same year, 25 were treated after extraction as ambulant cases; were allowed to return home immediately after the operation and thereafter visited the clinic daily for the necessary attention. Of these 25 extractions two, or eight per cent., were failures.

Including these cases, during sixteen years 371 extraction cases confined in the usual way showed 39, or ten per cent., failures. while during a six year period, 232 ambulant cases show 18, or seven per cent., failures. No case in which vitreous was lost was treated as an ambulant case.

It is noted that, while post-operative dementia occurred several times among the patients confined to bed and to the hospital, no case occurred among those allowed to return to their homes after the operation.



A brief description of the operative technique is given together with a full one of the dressing employed to prevent injury to the eye and the efforts of the patient to get his fingers under the dressings.

The combined operation, with large corneal section and moderate conjunctival flap, was done in the great majority of instances. The capsule was usually opened with the point of the knife. No diminution in the number of after-cataracts having been observed, the use of the Fuchs forceps was abandoned.

The simple operation having seemed unsuited to hospital practice was given up, long before 1908, save in exceptional cases.

Since 1905 absolute anaesthesia has been secured by the deep subconjunctival injection of cocaine—adrenalin—normal salt solution—10-10-20 (Robin).

The dressing first used consisted of pad, bandages and cataract cage, and striped keratitis was distressingly common.

In 1904 this was changed to the Blanco collodion dressing and striped keratitis virtually disappeared.

The legitimate conclusion is that the striped keratitis must have been due to the pressure of the bandage in the first dressing and the absence of pressure from the Blanco dressing.

In several cases in which the presence of pathological micro-organisms in smears led to vivid apprehension of infection, all dressings were abandoned; the patient laid with his eyes closed and instillations of ten or fifteen per cent. solution of argyrol were made at intervals of about an hour, and with success.

Unless complaint of pain gave warning, the first dressing was not changed until forty-eight hours had elapsed. After this the cataract cage alone was substituted as soon as possible.

The long undivided conjunctival bridge was used from about 1909 on in many cases. It is thought to have proved its usefulness when loss of vitreous, danger of infection, etc., are especially apprehended. During this twenty-three year period, and before, discission of immature cataracts was frequently tried and as often abandoned, on account of the untoward uveal hyperemia induced.

The cases were entirely unselected. No case in which the better eye was useless for reading was refused. This practice has inclined to the belief that a previously healthy condition of the eye is more important than the general condition of the patient.



DISCUSSION.

Dr. Knapp: I should like to ask Dr. Bruns to explain the mixture used for the subconjunctival injection, and also to give the particulars of the Blanco collodion dressing.

Dr. Bruns: We use what we call the 10-10-20 mixture and do all our operations with it. It is a mixture of 10 drops of 4 per cent. cocaine, 10 drops of 1:1000 adrenalin, and 20 drops of normal salt solution. The Blanco dressing consists of two layers of gauze. The first is fastened with collodion to the rim of the orbit and the inner side of nose. Over this is placed a pad of absorbent cotton. Then a second piece of gauze, a little larger than the first, is placed over the absorbent cotton; and this is cemented down also with collodion.

Dr. C. H. May, New York: Since discarding the bandage for cataract cases two or three years ago, I found that the patients are much more comfortable, that healing has been more rapid, and that there have been fewer complications. I use a simple gauze and cotton dressing with a piece of adhesive plaster to keep that in place. I always inject a 5 per cent. solution of cocaine in advance of the cataract extraction.

Dr. Weeks: I practice subconjunctival injection in all cases in which the iris is to be touched, using a solution of cocaine, 2 per cent., and adrenalin; 2 or 3 drops being injected in two places of about 5 mm. from the corneal margin. I should like Dr. Bruns to explain about the 7 per cent. lost.

Dr. Bruns: I admit that the figures are very high, but that is on account of their being taken from hospitals where we have to deal with a poor class of people, on whom all operations are very unsatisfactory. I do not see that there is any advantage in injecting in two places.

Dr. R. A. Reeve, Toronto, Can.: Not having used a bandage in a cataract extraction case for at least twenty-five years, I have seen but few cases of striped keratitis. I was not aware that exemption in these cases was due to lack of pressure from the bandage.

Dr. Bruns: Pressure on the cornea is not the only cause of striped keratitis, but is evidently one important cause.

*Extraction of Cataracts in the Capsule by a Slight Modification of the von Graefe Method.*

Dr. Ervin Toeroek, New York: By making the incision somewhat larger, using the Kalt forceps instead of the capsule for-

ceps with teeth, and by a combination of traction and slight pressure, I succeeded in removing the lens in the capsule in 43 out of 53 consecutive cataract extractions.

DISCUSSION.

Dr. F. H. Verhoeff, Boston: I wish to show an improved capsule forceps by which Toeroek's method of intra-capsular extraction may be simplified.

Dr. Carl Fisher, Rochester, Minn.: I have done a series of 11 cases of extraction of the cataract in capsule. In all but 2, the results were good, with vision over 20/20. In those two cases there was bulging of the vitreous body.

Dr. W. B. Lancaster, Boston: I have tried Dr. Toeroek's method in a few cases, and it seems to me a great improvement over any other intracapsular method. In cases of immature cataracts, in which I have found some difficulty in grasping the capsule in this way, instead of waiting to grasp the capsule before applying counter pressure, I apply it at the same time. It seems to me that there are more opacities of the vitreus after this operation than after ordinary extractions.

*The Ætiology of Iritis.*

Drs. E. V. L. Brown and Ernest E. Irons, Chicago, Ill. (by invitation): This is a study of 100 cases of iritis. Each patient was examined for syphilis, tuberculosis, gonococcal, dental, tonsillar, sinus, and other infections which might give rise to lesions in joints, eyes, etc. Careful attention was given to the history, past and present, of the several infections and a complete physical examination was made. Tuberculin tests (1, 3, 5, mg.) were made in suitable cases.

Laboratory examinations included Wassermann test controlled by two laboratories; complement fixation test for gonococcal infection; radiographs of teeth and sinuses, and of the lungs where there was any question of pulmonary disease; cultures of pus from tonsils, sinuses, prostate, etc.

Dental infection was regarded as an adequate cause of metastatic infection only if the process was "closed," such as alveolar abscess. Tonsillar abscesses have been included but not tonsils with superficial crypts only. In several cases gonococcal infection with arthritis was the only demonstrable cause.

We were able to follow the course of a majority of the cases,

and by the response to treatment directed toward the elimination of the cause we obtained valuable evidence confirmatory of the etiologic diagnosis.

While this study is not intended primarily as a statistical one, the frequency of the various types of infection is of interest. The proportion of syphilitic iritis is much smaller than has heretofore been stated in texts. Dental and tonsillar infections are responsible for a large number of cases, most of which under the older classification would probably have been termed "rheumatic."

Several cases came to us with a provisional diagnosis of "iritis from auto-intoxication." In none of these did we fail to find infectious processes, such as tonsillar or alveolar abscess, and the previously resistant iritis subsided promptly on relief of the infection without measures directed toward the treatment of the supposed "gastrointestinal autointoxication."

Iritis has been produced in animals by the intravenous injections of bacteria obtained from human cases. The bearing of these experiments on the relation of focal infection and trauma to iritis in man is discussed.

#### DISCUSSION.

Dr. deSchweinitz: Irido-cyclitis must be studied as a complication in a symptom complex rather than as an independent disease. When double infections occur, such as syphilis and iritis, it does not necessarily follow that if we eradicate the syphilis the iritis will get well. There may be still left a focal infection, which is the active cause of the iritis. When we hunt for focal infections, the modern method of inspection by means of the tests and the microscope must be employed.

Dr. Marple: There are no peculiarities about the iritis from an apical abscess that distinguish it from certain other causes. This was demonstrated recently in a case of iritis in which we also found an apical abscess. The patient began to improve immediately, on the treatment on which I placed him before discovering the abscess. The abscess was not treated before the iritis got well. This illustrates the importance of being sure that the suspected etiologic factor is the real one.

Dr. Weeks: I should like to ask whether the papillary elevations in the minor zone of the iris had anything to do with syphilis, whether the authors have observed any cases with papular tumor due to syphilis or tuberculosis, and whether they have found any cases in which tumors such as we find in tubercular iritis have been due to any other cause.

Dr. H. H. Briggs, Ashville, N. C.: I think we sometimes give undue importance to the fact that the patient has tuberculosis from the response to the tuberculin test. I believe that this test is not so important in diagnosis as is the Wassermann.

Dr. M. I. Foster, New Rochelle, N. Y.: It is customary now to omit from the list of causes, rheumatism; but in a case that I had, the urine was found to contain a great over-production of uric acid. The patient was put on treatment for rheumatism, and in short time after this the obstinate iritis proceeded to get well.

Dr. Samuel Theobald, Baltimore: I have once or twice seen cases of nodules on the iris that were diagnosed as tubercular iritis. In one of these cases a Wassermann showed a positive reaction, and when the patient was given a anti-syphilitic treatment the suspected tubercular iritis cleared up.

Dr. Brown: We did not see one case that was definitely tubercular, so far as the appearance of the iritis was concerned.

Dr. Irons: We have made no diagnosis of tubercular iritis on the tuberculin test alone.

#### *An Uncommon Affection of the Upper Lids.*

Dr. Robert L. Randolph, Baltimore, Md.: This disease is the first of the kind that has come under my observation. It is characterized by considerable loosening of the skin of the upper lids and by thinness of the connective tissue in this location. The child is fifteen years old and the condition has been present since birth. There are lichen-like changes in the surface of the skin. To me it suggests the very rare affection of dermatolysis.

#### DISCUSSION.

Dr. Edwin Stieren, Pittsburg: I think this case can be classed among the cases which have a thickening of the integument and great ruggedness. The interesting feature of the case is that the condition appears to be congenital, whereas the majority of reported cases have occurred early in puberty.

Dr. Edw. B. Heckel, Pittsburg: I had a patient within the last year, a girl of fifteen years of age, who presented the typical characteristic appearance described as blepharochalasis, involving one eye, preceded by intense swelling of the lids. There is a marked ptosis of the lid.

*Observations Upon Herpes Corneæ "Febrilis".*

Dr. Samuel Theobald, Baltimore: Herpes of the cornea is an affection of more frequent occurrence than is commonly supposed. It often develops without precedent or accompanying "febrile" disorder. The primary lesion which gives rise to it is not improbably in the ciliary ganglion, and comparable to that which, occurring in the Gasserian ganglion, leads to the development of herpes zoster ophthalmicus. Corneal hyperæsthesia is the most important diagnostic sign, and is usually not limited to the infiltrated and ulcerated areas. It is important that constitutional as well as local treatment should be given.

## DISCUSSION.

Dr. Verhoeff: I do not quite agree with the plan of calling all the cases herpetic, and then classifying the others as subdivisions coming under that general head. For instance, Dr. Theobald classifies the neuropathic cases as subdivisions of the herpetic type. It seems to me that the proper way would be to classify them all as neuropathic keratitis, and list the herpetic type, the dendritic type, etc., as subdivisions of the neuropathic. I do not think that the question as to whether the Gasserian or the ciliary ganglion is at fault is at all settled. We know that in herpes zoster the Gasserian ganglion is the one at fault; we have anatomical evidence to that effect. It is a settled fact that the Gasserian ganglion is at fault in optic nerve herpes, and we know that we can get neuropathic herpes and any other kind of keratitis from this cause; and so we would naturally think that others must be due also to trouble with the Gasserian ganglion. We cannot get herpes of the face and nose from trouble in the ciliary ganglion, and that goes to show that the Gasserian is affected when we find the cornea affected. On the whole, I am inclined to believe that the Gasserian ganglion is at fault in the vast majority of cases.

Dr. Theobald: The nomenclature which I followed was the same as that used by Fuchs. In my experience herpetic keratitis very rarely occurs in association with facial herpes. Most of the cases which I have encountered have had no facial herpes associated with them.

*Ophthalmic Work in a British Base Hospital.*

Dr. Allen Greenwood, Boston: There are two classes of cases in which the fundus examination is of more than ordinary interest in the British Base Hospitals scattered throughout the western



part of France. Many soldiers are sent to the hospital from the trenches with what is known as "trench nephritis", a form of acute nephritis apparently resulting from the absence of proper skin elimination due to standing for days and days in water-soaked clothing, and often in water up to the waist. These men come in with a very marked œdema, which begins to subside as soon as they are put into bed. The early fundus examination in these cases shows a marked œdema of the optic nerve and retina. The other class of cases in which the fundus examination is of interest, and also of great help to the surgeon, are those in which men have perforating bullet or shrapnel wounds of the skull, an optic neuritis, which may be of inflammatory type or of a compression type, being frequently found. The increase and decrease of the choked disc in such cases become a helpful guide to the surgeon.

#### DISCUSSION.

Dr. H. F. Hansell, Philadelphia: I should like to ask whether the optic neuritis is always double, or is more marked in the injured.

Dr. Greenwood: The optic neuritis was practically always double, but the higher elevation of the disk was invariably on the injured side. In some cases the optic neuritis was very slight on the injured side, whereas on the uninjured side it was markedly increased.

Dr. S. D. Risley, Philadelphia: I should like to inquire whether in these cases of trench nephritis the general œdema subsided with the œdema of the fundus?

Dr. Greenwood: Inside of six or eight hours the œdema had largely disappeared; in twenty-four hours there was no sign of œdema except perhaps a little pitting on the skin.

Dr. W. E. Lambert, New York. Are any of these cases of trench nephritis complicated with effects of poisonous gas?

Dr. Greenwood: There was no complications with poison gases.

Dr. Weeks, New York: I should like to ask if all these cases recover?

Dr. Greenwood: Yes, the cases all recover.

*Report of the Removal of a Tumor at the Apex of the Orbit with Preservation of the Eyeball in a Case of Plexiform Neuroma of the Eyelid. Microscopic Examination.*

Dr. Arnold Knapp, New York: In a case of plexiform neu-



roma, with multiple pigmented tumors of the skin and retarded mental development, in which a number of operations had previously been performed to remove the tumor of the eyelid, an exploratory operation of the orbit was performed on account of exophthalmos. A tumor about the size of an almond, measuring 20x12 mm., was discovered at the apex of the orbit, apparently adherent to the optic nerve sheath. This tumor was removed without causing any injury to the eyeball. The microscopic nature of the tumor was that of a fibroma.

DISCUSSION.

Dr. E. C. Ellett, Memphis, Tenn.: I should like to ask Dr. Knapp if he did the Kroenlein operation, and how old the patient was?

Dr. Knapp: The patient was a girl, seventeen years of age, and the operation was the Kroenlein operation.

*An Unusually Large Osteoma of the Frontal, Ethmoidal and Sphenoidal Sinuses, Involving the Orbit and Anterior Cerebral Fossa, Presenting no Subjective Symptoms other than Proptosis of the Eyeball.*

Dr. C. A. Veasey, Spokane, Wash.: The patient, a married woman, had observed a very slowly increasing proptosis of the eyeball for at least eleven years. She complained of no symptoms but desired something done to improve the appearance. The eyeball was proptosed downward and outward, but there was no paralysis of any of the ocular muscles; nor was there any abnormal condition of the optic nerve. Examination revealed a large bony growth of the orbit. The skiagraph showed not only that the orbital portion of the skull was involved, but also that a bony growth as large as a medium sized hen's egg extended into the cerebral cavity in the anterior cerebral fossa, and extended from the frontal sinus anteriorly to the sella turcica posteriorly.

DISCUSSION.

Dr. R. A. Reeve, Toronto, Can.: It was my good fortune to see Sir John Tweedy remove an osteoma, which apparently corresponded very closely with that described by Dr. Veasey, but Sir John Tweedy contented himself with the removal of the orbital portions by means of the chisel and mallet, and the patient apparently recovered, but about four weeks later developed serious symptoms of deep metastasis and was carried off shortly.

Dr. Edw. Jackson, Denver, Col.: In a case reported some years ago, a portion of the bone growth was first removed, but finally it was enucleated from the frontal sinus. That patient I saw after five years with no signs of extension or recurrence, and I believe is still living and in good health.

*A Case of Recurrent Sarcoma at the Limbus Treated by "Electrical" Desiccation.*

Dr. Burton Chance, Philadelphia: The primary development of this case was very rapid, and complete excision was made after nine months, but there was a recurrence in two months. A second excision was made. There were three later exuberant recurrences after excision at intervals of a few weeks. Three weeks after the last recurrence the mass was subjected to desiccation, with complete success. There was no return of the trouble.

DISCUSSION.

Dr. Geo. S. Derby, Boston: I should like to know exactly the method by which the heat is determined in the desiccation process.

Dr. Chance: The electric flame is caused by contact of the needle, and of course you can make it long or short, depending on the power in the generator. In this case I should say the flame was not more than one-eighth of an inch in length, but in deeper areas the operator would make a longer flame.

*Report of a Case of Mclano-Sarcoma of the Orbit Treated with Radium.*

Dr. Edw. B. Heckel, Pittsburg: This case was a man forty-eight years of age, who had been under observation for four years. The tumor originated within the eyeball. The eyeball was enucleated, and an orbital invasion followed. Radium was inserted into the orbit four times; the first insertion, in March, 1914, and the last, in June, 1915. The disease has been held in abeyance, at least, if not cured, and the physical condition of the patient has remained good, so that he has been able to follow his vocation.

DISCUSSION.

Dr. Wm. Zentmayer, Philadelphia: I should like to report a case of radium treatment in which the result was far from satisfactory. It was the case of a colored girl, ten years of age, who

had sarcoma in the fore part of the orbit. I did a total evisceration of the orbit last fall, taking off the periosteum. This was followed by the application of radium. In three months time there was a recurrence in the upper, inner angle of the orbit. I reflected the lids back, and removed all the growth and all tissues in the interior part of the orbit which were still present. The radium treatment was again given; and after a lapse of three months we found a little indurated mass beneath the supraorbital margin, which gradually increased in size until it protruded through the fissure. I operated on the patient again last Thursday, but regret to say that she died a half hour after the operation.

Dr. Lambert: I had almost the same experience as that described by Dr. Zentmayer. The patient was one for whom a removal of the sarcoma had been attempted three times, recurring each time; and I turned the patient over to Dr. Abbe. Finally Dr. Abbe concluded to do a radical operation, but the patient died on the table.

*A Case of Syphilitic Retino-Choroiditis Juxtapapillaris with Microscopic Examination.*

Dr. F. H. Verhoeff, Boston: The patient, a man aged twenty-eight years, developed primary syphilis of the left tonsil and was treated with neosalvarsan and mercury for about one month. At the end of this time the tonsil was much improved and the patient discontinued treatments. About two months later the patient noticed that the sight of one eye was blurred; and one week after this the eye became painful and there were found slight iritis, vitreous opacities, and separation of the retina. A Wassermann test was negative. In spite of mercurial inunctions twice daily for three weeks, the inflammatory condition of the eye and the pain continued to increase, and the eye became totally blind, and was removed. On pathological examination there was found a granulomatous lesion at the margin of the disc, which involved chiefly the inner layers of the retina, and only secondarily the disc and choroid. Jensen's cases were probably not of syphilitic origin.

DISCUSSION.

Dr. T. H. Holloway: I should like to ask Dr. Verhoeff whether, from his microscopic examination, he thinks it would be possible for this exudate or granulomatous tissue to exist without

being severe enough to cause this scattered-like effect in the field. Petterson alludes to several cases where this manifestation existed, and where there was not this scattered defect.

Dr. Zentmayer: I had an interesting case of choroiditis juxtapapillaris in a healthy young man who had this typical field defect. It seemed to me that it would be easy to make a mistake in the diagnosis, unless a case were observed some time, where there was no visual defect; that it might be a case of retinochoroiditis. Such a diagnosis should not be made, unless the recurrence is at the same point and there is an absence of similar defects in other parts of the fundus of the eye.

Dr. deSchweinitz. I have had under observation the case of a girl of nineteen years of age. The examination showed the classic appearance of choroiditis juxtapapillaris, with the characteristic field defect. The only underlying condition found was persistent simple anæmia.

Dr. Verhoeff, Boston: One of the observers I quoted has, I think, reported some cases in which the scotoma was not only relative, but absolute, but I do not believe anyone has reported one without scotoma. One patient had a macular lesion and also an infiltrate, not so marked, but in the same situation, and every test possible was applied, with negative results. The only possible source we could find was one tooth that was in bad shape. I advised no treatment at all, thinking the patient would get well. Personally I believe these cases are in subjects who have previously had syphilis, and that the organism simply happens to lodge in different places, producing a different picture according to where it happens to lodge.

*Cyanosis Retinæ et Conjunctivæ in Connection with Pulmonary Stenosis and Patent Ductus Arteriosus.*

Dr. Robert Scott Lamb, Washington, D. C.: The case was seen in consultation with a general practitioner, and was diagnosed as cyanosis of the retina and conjunctiva in connection with pulmonary stenosis and patent ductus arteriosus. Water color pictures were made by Miss Washington. X-rays, made of the chest, heart, the hands and the feet, showed dystrophy. The venous picture presented by the patient was different from the usual venous picture of mitral regurgitation and mitral stenosis. There was a low venous pulse with resulting passive congestion.

## DISCUSSION.

Dr. Holloway: It is well known that many of these cases may run on for years after the development of the cynosis before they terminate in death. The majority of cases showing retinal hæmorrhage seem to indicate that after the development of the hæmorrhage life was short. One other interesting fact is the association of other conditions that produce cyanosis. We get very much the same venous pictures in certain toxic conditions. A few years ago a case of this character came under my observation; there was a marked cyanosis, with the most unusual blood picture that I have seen, and in this patient the diagnosis was made of congenital heart disease.

Dr. W. B. Weidler, New York: I should like to report a case of cyanosis of the retina associated with patulous foramen ovale. The patient was a girl, ten years of age, and at the time of birth described as a "blue baby". At the present time the child shows a great amount of bluish discoloration of the lips, tongue and all the mucous membranes that can be examined, and the finger nails have a bluish discoloration. The child is usually having colds, and is unable to play or endure a slight amount of exertion without undue fatigue and exhaustion.

*(Concluded in next number.)*

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The second meeting of the Colorado Ophthalmological Congress will be held in Denver, August 1st and 2nd, 1916. The program of the Congress can be obtained after June 20th, by application to the Secretary, Dr. Wm. H. Crisp, Metropolitan Building, Denver, Colorado.



## ABSTRACTS FROM MEDICAL LITERATURE.

BY W. F. HARDY, M.D.,

ST. LOUIS, MO.

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### THE BLIND CHILD.

No one, probably, is better qualified to discuss subjects pertaining to blindness and blind people than F. Park Lewis, of Buffalo. He has an article in the *New York State Journal of Medicine*, January, 1916, which is intended mainly for the family physician, as he is generally the first one sought for aid and advice by the distracted parents of a blind child. Ultimately the oculist is called upon for guidance, and it is well that he be able to render the best advice which will be conducive to the well being, development, moral and physical, and happiness of the unfortunate blind child. Of prime importance is the recognition as soon as possible of the existence of blindness or greatly impaired sight. Lewis also emphasizes the manner in which the brain is developed through the training of the remaining special senses in the absence of sight, and of the existence of that unusual condition, more highly developed in the blind than in those who see, and what is sometimes termed the sixth sense, or touch at a distance. During the first weeks of life it is difficult to determine if a baby is actually blind. If, however, the pupils are widely dilated, unresponsive to light, the eye move aimlessly about without attempt to fix, and particularly if nystagmus is present, and inability to follow a light, then we have strong presumptive evidence of blindness if these symptoms are present after the sixth month. An ophthalmoscopic examination will give more certain and definite conclusions. Lewis strongly advises the early development of the other special sense functions. With the visual images in a seeing child every other sense impression is correlated, therefore the greater need in the blind child of early patient and systematic training of his remaining faculties. Delayed instruction is unjust to the blind child and is a mistaken kindness on the part of parents or friends. Such children should have the benefit of intelligent and well directed training, such as only a high grade blind school can give. The study of "touch at a distance" has been considered by the French Academy, but has received but comparatively little general recognition. It has been suggested that it is in the hearing that this sense finds its center. Pledgets of cotton placed in the ears pre-



cludes the exercise of the function; but blind people who have had the face covered with a veil are equally confounded when the tests are made. It is probable that the pressure sense excited by the slight compression of the air between the solid surface and the surface nerves both of the face and tympanum, enter largely into this phenomenon. Lewis promises some exact scientific investigations on this subject, to be reported later, which he states appeal not only to the ophthalmologist but to the otologist, neurologist, physiologist and psychologist as well.

#### THE IODIN COMPOUNDS OF THE HUMAN THYROID.

There are a number of subjects in general medicine allied more or less closely to ophthalmology, which if fully understood might throw great light on a number of ocular conditions of unknown or obscure origin, and point the way to a rational therapy, where at present we are compelled to treat these affections in an empirical manner. Thyroid has been used in a rather haphazard way both in general medicine and in ophthalmology. It has been given in the hope that benefit would ensue without any clearly defined idea as to how it was expected to prove an aid. With the view in mind of determining the various properties of thyroid Kendall has done considerable original work. In a recent article by Wilson and Kendall (*Am. Jour. of Med. Sciences*, January, 1916) further work and study is recorded. The role of the endocrine glands to which the thyroid belongs is now receiving intensive study from various angles. That these glands have stimulating and inhibitory influences on a number of bodily functions must be admitted. The thyroid has an influence on the skin and its appendages. A recent article appearing in this journal, by Shoemaker, deals with the question of the loss of eyebrows and hair. Evidence is in favor of the view that thyroid exerts a trophic influence on the skin and its appendages. The dermatologist is quite familiar with this phase of the subject. The potency and influence of thyroid is closely and intimately bound up with its iodine content. By a process of splitting up or hydrolysis, Wilson and Kendall have been able to differentiate an a-iodin and b-iodin which possess radically different properties. Exophthalmic goitre is produced by hyperactivity of the thyroid. The isolation in pure form of a compound containing 60 per cent. of iodine and the proof that the substance is highly toxic in nature, emphasized the importance of an investigation concerning the amount and nature of the iodine containing compounds of the

thyroid. The *a* form is toxic, producing flushing tachycardia, etc. The *b* form is not toxic and is without many of the disagreeable properties of the *a*-iodine. The *a*-iodine compound is present in the actively hyperplastic glands of toxic goitres in only 1-20th to 1-15th the amount in which it is present in normal glands. This represents not a reduced production of toxic substance but is the result of its greatly increased diffusion from the gland into the blood stream. The chemical constituents found in the thyroid are only the complement of those which must have gone out of the gland to have caused symptoms. Those who are interested in a study of the endocrine glands will find the studies and experiments of Kendall and of Wilson and Kendall well worth perusing.

PRELIMINARY REPORT OF A NEW METHOD OF  
TREATING GONOCOCCI PURULENT CONJUNCTIVITIS  
BY THE EXCLUSIVE USE OF ICED NORMAL  
SOLUTION.

Heckel (*Penn. Med. Journal*, April, 1916) describes his method of treating true gonococcic purulent conjunctivitis by the use of iced normal salt solution. The treatment was used in but few cases but the author feels convinced that it has merit. He discusses the question of the heat and cold necessary to kill the gonococcus. Zero centigrade destroys the organism as does 42°C. (107.6F.). It thrives in the presence of moisture, whereas drying rapidly kills it. Reference is made to the almost universal custom of using iced pads in treating the malady. Heat has been used in the form of steam by Goldzieher. Iced water at a temperature of 35°F. was found by Heckel to be easily borne. On this assumption and the assumption that the gonococci are found only in superficial epithelial tissues and do not penetrate deeply, we have in iced normal salt solution a harmless effective germicide, easily produced, maintained, and easily applied. A few experiments were made in normal eyes. No change in the cornea was noticed. Heckel allows the iced solution to run over the lids and into the conjunctival sac between the lids. About a quart of solution is used. The flushings are repeated every six hours, iced pads being applied in the interim. The flushings are somewhat, but not very, painful. The swelling and discharge quickly subsides. The author believed that in iced normal salt solution we have an actual specific in the treatment of gonococcic conjunctivitis.